CITY OF JEFFERSONVILLE

WASTEWATER DEPARTMENT

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MAY 27 2015

WATER ENFORCEMENT & COMPLIANCE
ASSURANCE BRANCH, EPA, REGION 5

May 22, 2015

Indiana Department of Environmental Management
Office of Water Quality Mail Code 65-42
Compliance Branch
100 North Senate Ave.
Indianapolis, Indiana 46204-2551

RE: DRY WEATHER CSO AT MECHANIC STREET

The purpose of this letter is to detail the events that led up to the dry weather CSO event from Mechanic Street CSO that occurred all of April 2015, through May 15, 2015.

BACKGROUND

On May 7, 2015, in reviewing the data for preparation of the April CSO DMR report, staff noticed that there was an overflow every day at the Mechanic Street CSO (CSO 021) in the month of April 2015. The Collection System Supervisor was asked to check the CSO to determine whether there was actually a CSO event or an overflow flow meter malfunction. Upon checking the manholes between Mechanic and Wall Streets, all of the manholes where in a surcharged condition, except Locust St. The manhole on Locust St. had very little flow in comparison to the upstream manholes. (See **Market St. Sewer Repair** Map for the manhole locations)

This sewer line is the main interceptor (aka the Market Street Interceptor) and serves approximately 484 acres of the 967 acre combine sewer area and 431 acres of the sanitary sewer area which flows to the Market Street Interceptor. The map titled **CSO Service Area Affected by the Sewer Collapse** identifies the area affected by the sewer collapse.

ACTIONS TAKEN

The Collection System staff immediately tried to clean the sewer line from Locust St, upstream to the blockage located some 150 feet upstream of the manhole. After working on unblocking the sewer for several hours with no success, staff moved to the upstream manhole on Walnut St. and was able to get approximately 125 feet into the sewer before it hit the blockage. The combination sewer cleaning truck was bringing back quite a bit of debris but had no success unblocking the sewer line. The Department's combination sewer cleaning trucks have an 80 gpm high pressure water pump which we believed did not have enough water pressure to remove whatever was blocking the sewer line. The Department called in a sewer cleaning service which had a truck that would deliver more water pressure (120 gpm) to potentially

remove the blockage from the sewer line. There was a lot of sand and gravel being brought back by the larger combination sewer cleaning truck but there was little success in removing the blockage.

On May 11, 2015, efforts resumed to remove the blockage. The Department again tried to remove the blockage by both Department staff and the contract sewer cleaning contractor. In fact, both the Department and the contractor had their jet cleaning heads get stuck in the area of the sewer where the blockage was believed to be located. See attached map which identifies the location of the blockage.

Since the jet cleaning efforts did not clear the blockage, the Department had no choice to dig up the sewer in the area of the blockage. This sewer receives all of the flow in the northwest portion of the combined sewer system. See the attached map which depicts the area served by this portion of the combined sewer system. The Construction staff was mobilized right after noon to begin the dig. The sewer is approximately 15 feet deep at the location of the dig site. The Department does not own any safety equipment (trench boxes) to protect staff at that depth, so equipment had to be rented from a safety equipment company in Louisville. Once the trench boxes were obtained (**Photo 1**), the digging began and the trench boxes installed in the hole at the location of the blockage based on the location identified by the sewer cleaning efforts. The trench walls consisted of Indiana clay which did not account for all of the sand and rock removed during all of the cleaning efforts. The sewer was vitrified clay pipe (VCP) and was in fairly good condition considering there was no bedding under the sewer pipe. When the sewer pipe was exposed, the source of the blockage was not found. Excavation continued to the extent of the trench box. Since the VCP pipe was damaged during the excavation, it had to be repaired before the trench boxes could be moved. Since there was a break in the VCP pipe in the trench, Department staff tried again to use the combination sewer cleaning equipment to remove the blockage. This effort brought back more sand and large gravel, which was very puzzling, since there was no evidence of that material in any of the excavation to reach the VCP pipe. (See **Photo 2 & 3**)

In discussions with two members of the Sewer Board and its attorney, it was decided that it was more appropriate to declare an emergency and hire a contractor that had experience in excavation at the depth of the sewer. A local contractor was contacted to complete the sewer repair. After the contractor was completely mobilized, excavation continued. Since there was too much debris in the sewer to get a CCTV camera into the exposed sewer, a visual observation was made and it revealed the blockage further upstream in the sewer and the sewer appeared to be a corrugated pipe. The excavation continued, and as the VCP pipe was removed, a new 18-in SDR 21 PVC pipe was installed. As the excavation continued to the location of the blockage, a void under the road was exposed (**Photos 4, 5 & 6**). The source of the sand and gravel was the backfill used when the corrugated pipe was used to replace the VCP sewer. Once the blockage was reached additional corrugated pipe was encountered. The corrugated pipe was severely corroded and appeared to be the source of the sand and gravel and inflow into the sewer. Approximately 115 linear feet of corrugated sewer was removed and replaced with 18-in PVC (**Photos 7 & 8**).

The Department tried several times to pump the water in the upstream manhole on Market and

Walnut Streets around the blockage to at least minimize the overflow volume. The Department utilized an 8-in Godwin pump but there was so much debris in the sewer that the suction strainer kept getting clogged, as can be seen in **Photos 9 and 10**. Staff removed the strainer from the suction line to see if that would help, which resulted in the debris clogging the impeller, which rendered the pump inoperable. The Department contacted a local company that the City rented pumps from in the past to see if they might be able to supply a non-clog that would be capable in handling the debris and volume of water. They would be able to supply a 12-in hydraulic pump but we would have the same problem with the pumps clogging, just on a bigger scale. Department staff kept using the combination truck to remove the debris from the manhole on Market and Walnut Sts.

SUMMARY AND ADDITIONAL ACTIONS

The Department has very few records on the construction of the Market Street Interceptor. However, the City's consultant has located what is believed to be the original plans for the interceptor, which were dated 1955. The most senior of the Department staff, who started work for the City in 1970 and worked in the collection system since then, had no recollection of any work being done on this sewer during his time with the City. This leads one to believe that the VCP sewer line was replaced with the corrugated metal pipe sometime between its initial installation in 1955 and 1970. The City and the Wastewater Department had no indication that the Market Street Interceptor had any other sewer pipe other than VCP.

The City has had CSO Flow Meters on each of the identified CSOs, both the one discharging to the Ohio River and to Cane Run. The Department Staff and interested citizens get notified anytime a CSO discharge into the Ohio River is activated. If the CSO discharge ceases and restarts, an additional notification is texted and sent to the Department's Facebook page. However, if the CSO starts and does not cease, no additional notifications are sent. This was the case in this situation. The Mechanic Street CSO Flow Data can be found in **Attachment 1**. As can be seen, the level in the CSO structure was at a high level from March 8th through March 21st due to high water elevation in the Ohio River. The CSO flowmeter sent out an alert of a CSO event on March 21st. Since the CSO event never ceased after March 21st there were no further notifications, even though the CSO discharge continued.

Cause of the Overflow

The Department believes that the flood stage in the Ohio River caused problems with the hydraulic conditions in the Market Street Interceptor. **Attachment 1** contains all of the CSO event data for the CSOs that discharge into the Ohio River and the Ohio River levels for the period of March 1 through May 16, 2015.

There were some issues with the operation of the flood control gates which prevent the high water in the river from backing up into the Market Street Interceptor. Each of the CSO flow meters measures the water temperature in addition to the level, velocity, flow rate, and total flow discharged during each CSO event. The temperatures at each CSO overflow location indicate that the water temperature decreased during the same timeframe in which the Ohio River was in flood stage. The normal pool elevation of the Ohio River at the Upper Gage above

the McAlpine Dam is 12.82 feet. During the period from March 1st through March 21st, the River reached a high level of 29.77 feet or 6.77 feet above the Flood Stage of 23.00 feet.

The CSO discharge from the Mechanic Street CSO started at the same time that the Ohio River was still above the flood stage. As previously explained there was one notification after March 20th which was March 25th, as a result of a precipitation event and no additional discharge notifications until May 13th when the City was repairing the sewer collapse on Market Street.

Long-Term Solutions

The Department is working with the flow meter supplier to modify the CSO flow meter to send out an alert when the CSO discharge ceases and, if it continues, an alert is sent out every day. In addition, Department Staff will check the flow meter internet website daily to make sure there are no additional dry weather discharges. The Department staff is also pursuing new software that will provide additional measures to check on the status of the CSO discharge locations.

The Department is in the process of preparing a request for quotes to clean and televise the entire length of the Market Street and Mulberry Street Interceptors to determine the condition of the sewer line and head off any additional problems in this interceptor sewer.

Sincerely,
CITY OF JEFFERSONVILLE

Len Ashack
Director

cc: Jeffersonville Sanitary Sewer Board
Dave Tennis - IDEM, Office of Water Quality
John 'Jack' Bajor – USEPA Region V, OWECA

Photo 1 – Installation of one of the two trench boxes on Market Street.

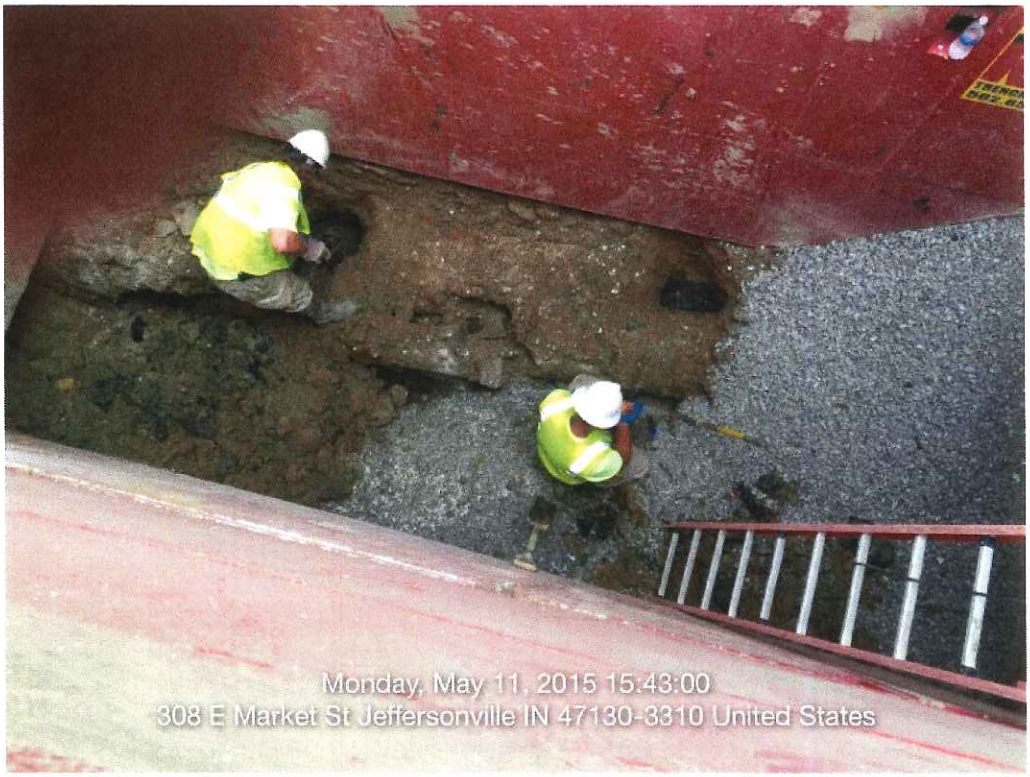


Photo 2 – Department Staff preparing the VCP sewer for connection to the new PVC sewer

Photo 3 – The sand and river rock from the collapsed sewer on Market Street

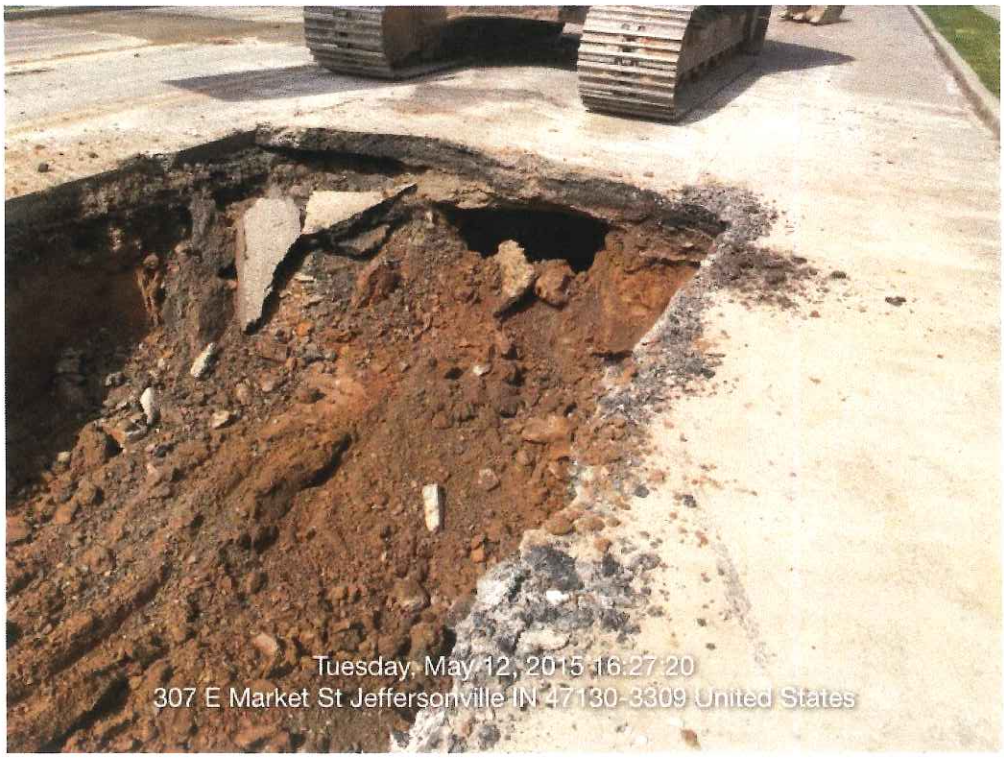


Photo 4 – The first sign of the sewer collapse with the void under Market Street.

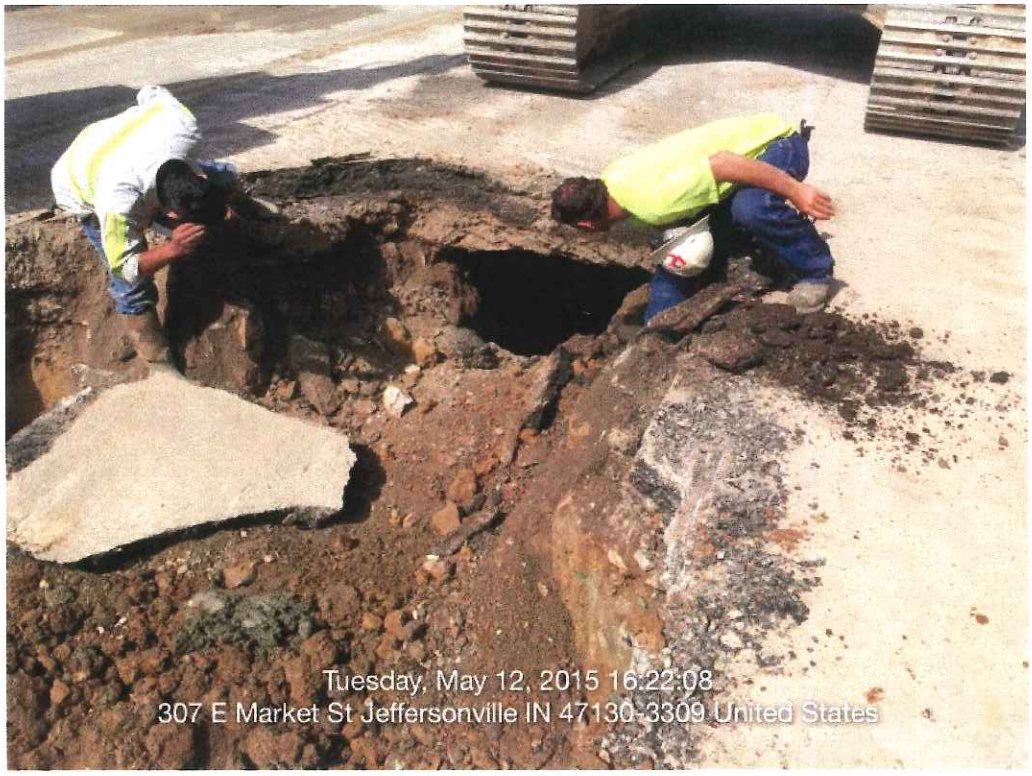


Photo 5 – Photo showing the void under Market Street

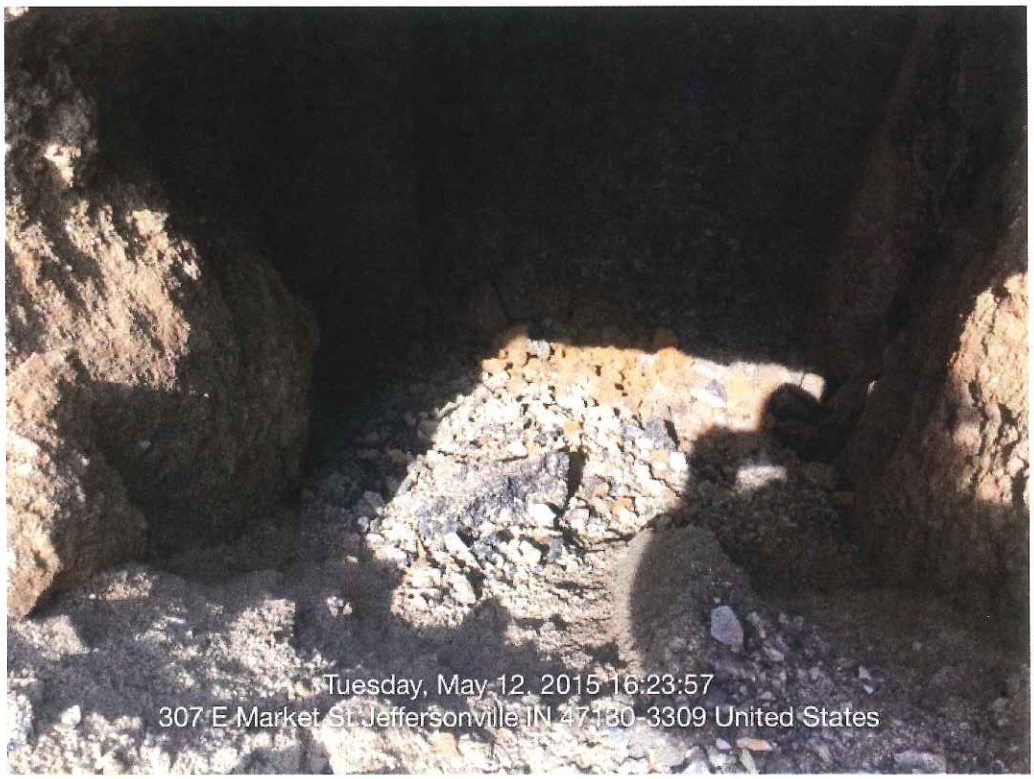


Photo 6 – Close-up Photo of the extent of the void under the road and over the collapsed sewer

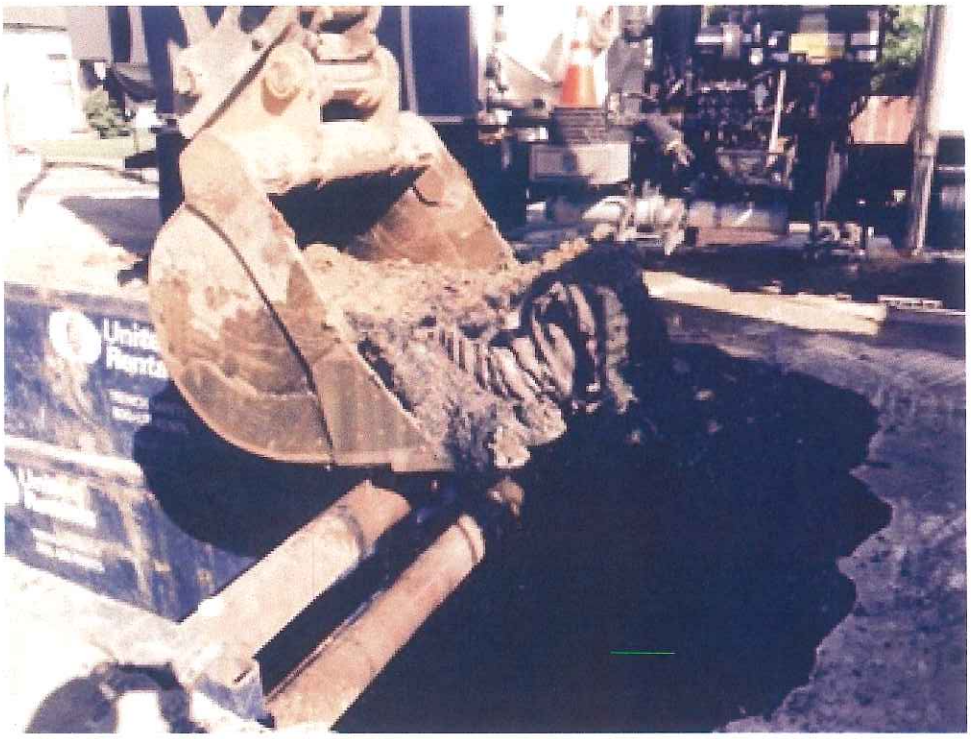


Photo 7 - Photo showing a portion of the collapsed corrugated metal pipe

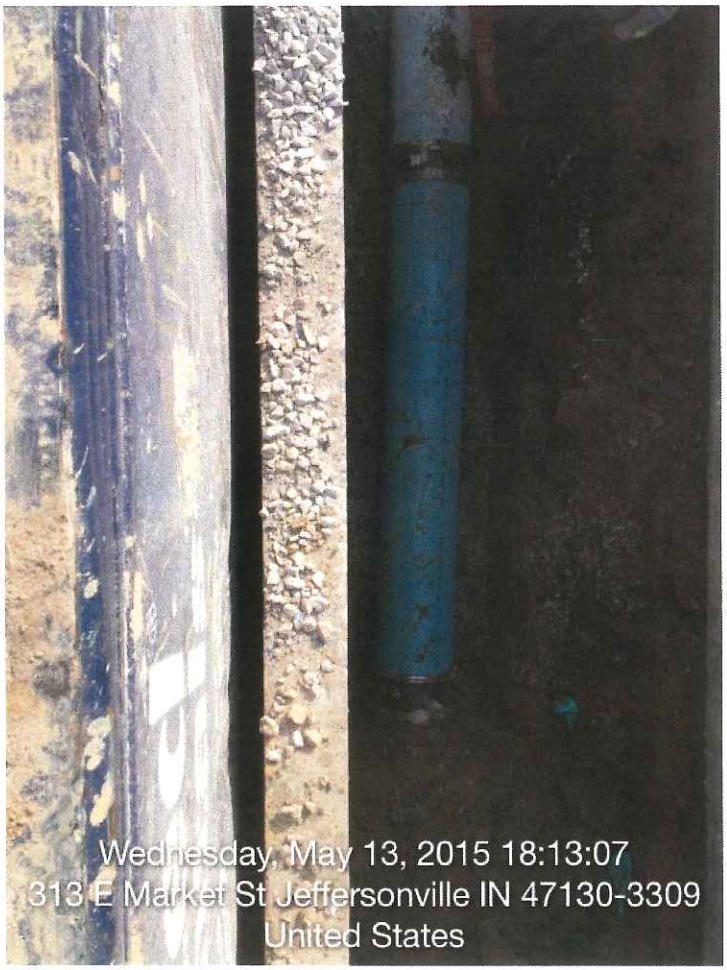


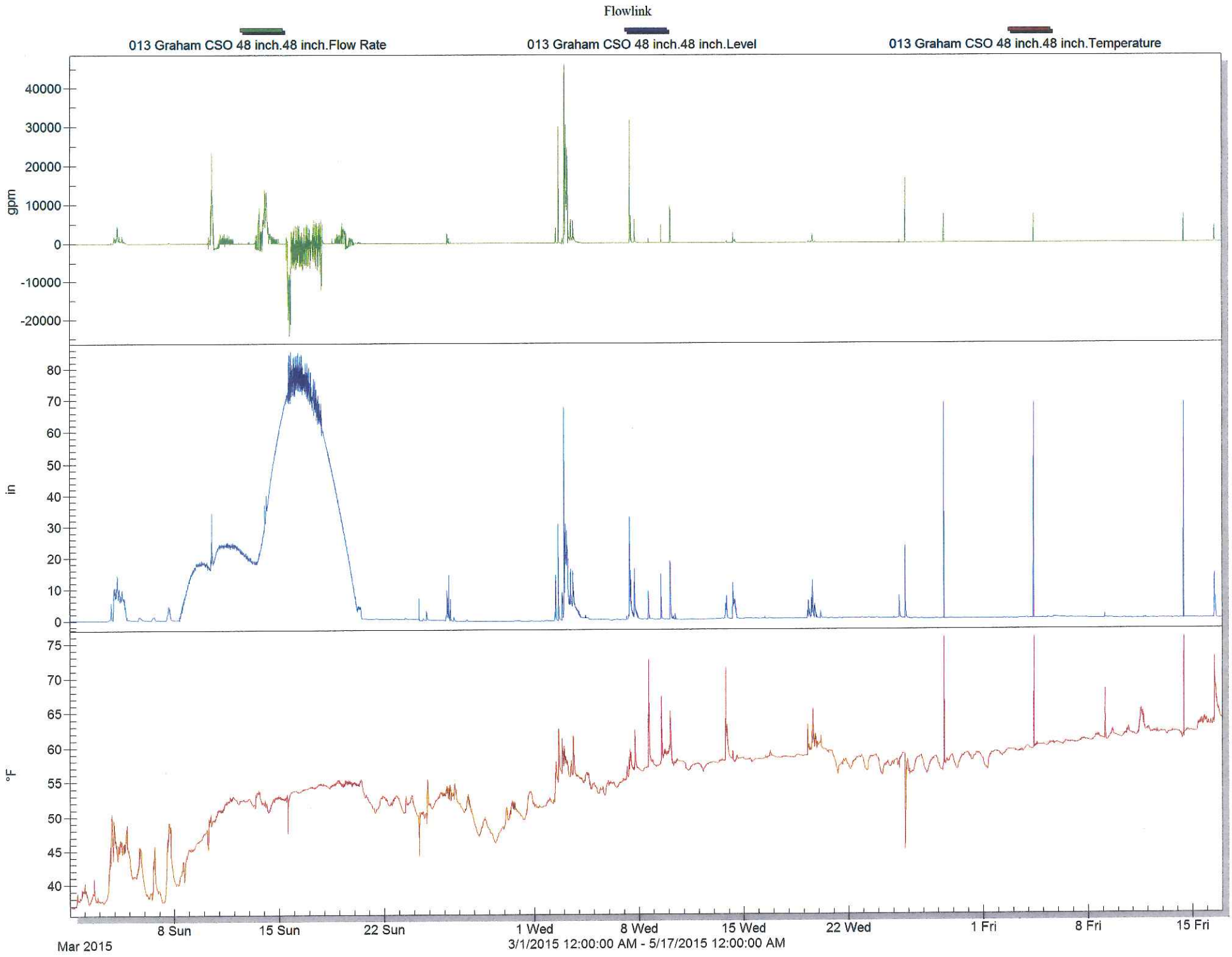
Photo 8 – Photo showing the final connection of the new 18-in PVC to the VCP sewer

Photo 9 – Debris collected around the strainer on the 8in Godwin Pump suction line

Photo 10 – Debris on pump suction line strainer

ATTACHMENT 1

CSO OVERFLOW CHARTS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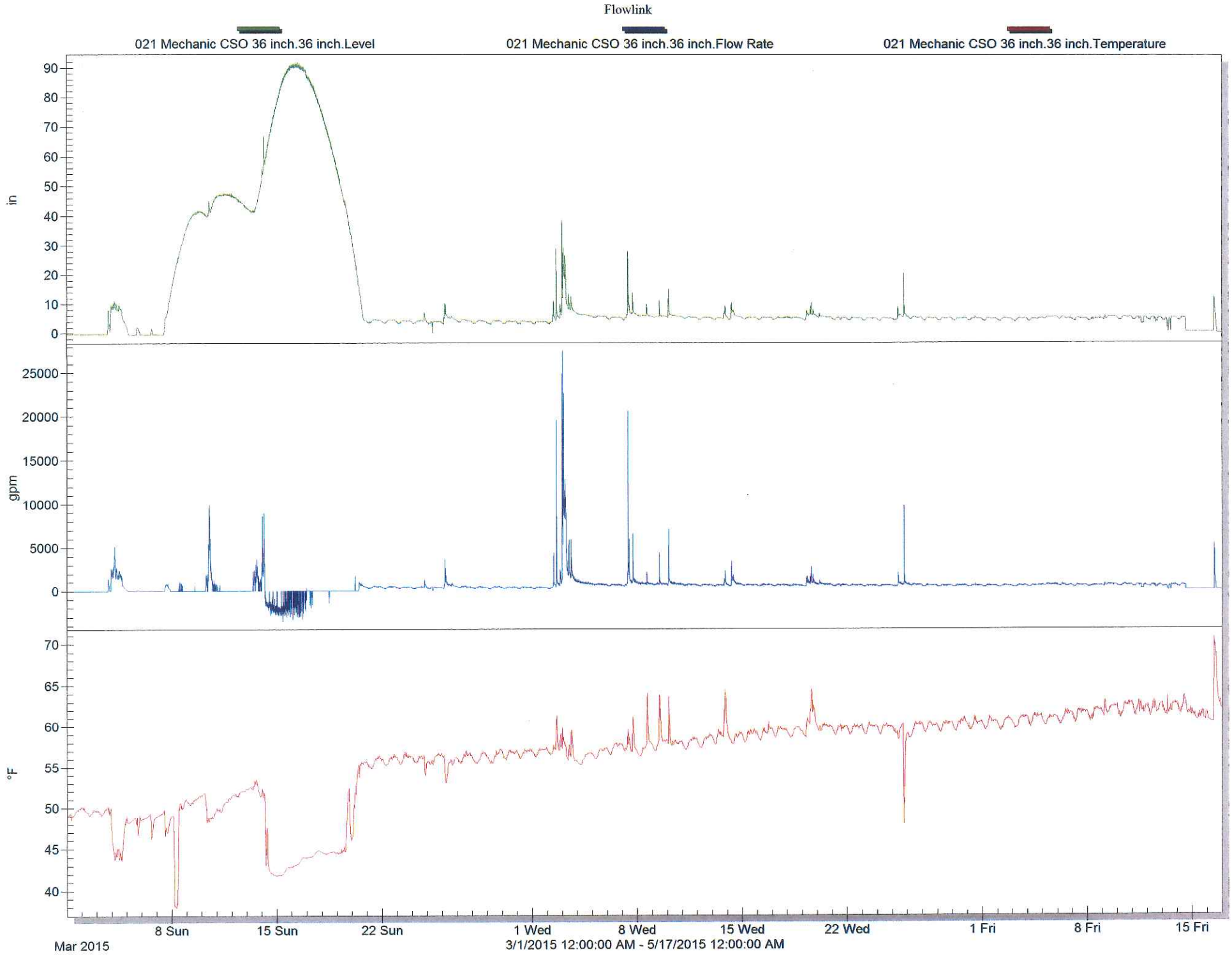
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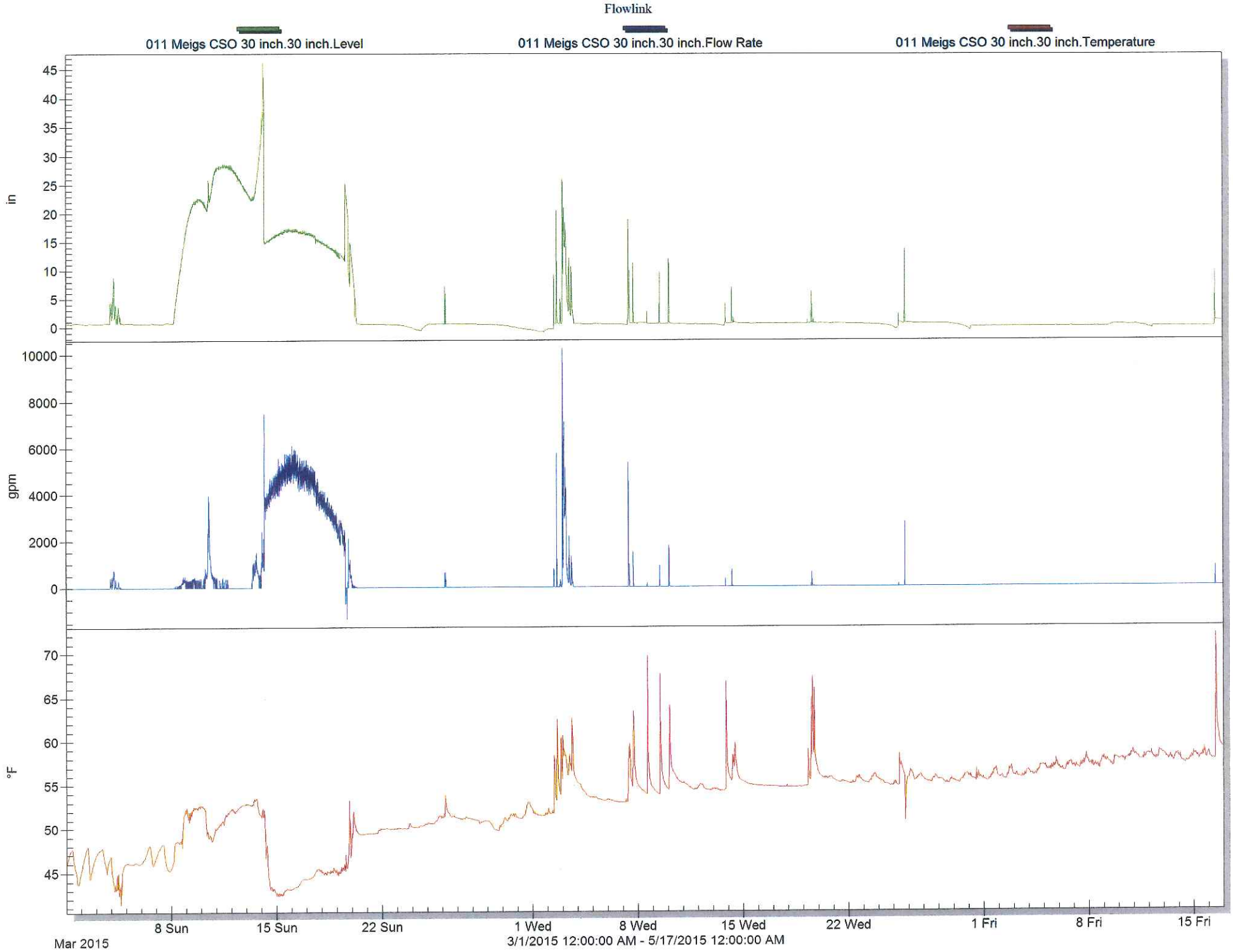
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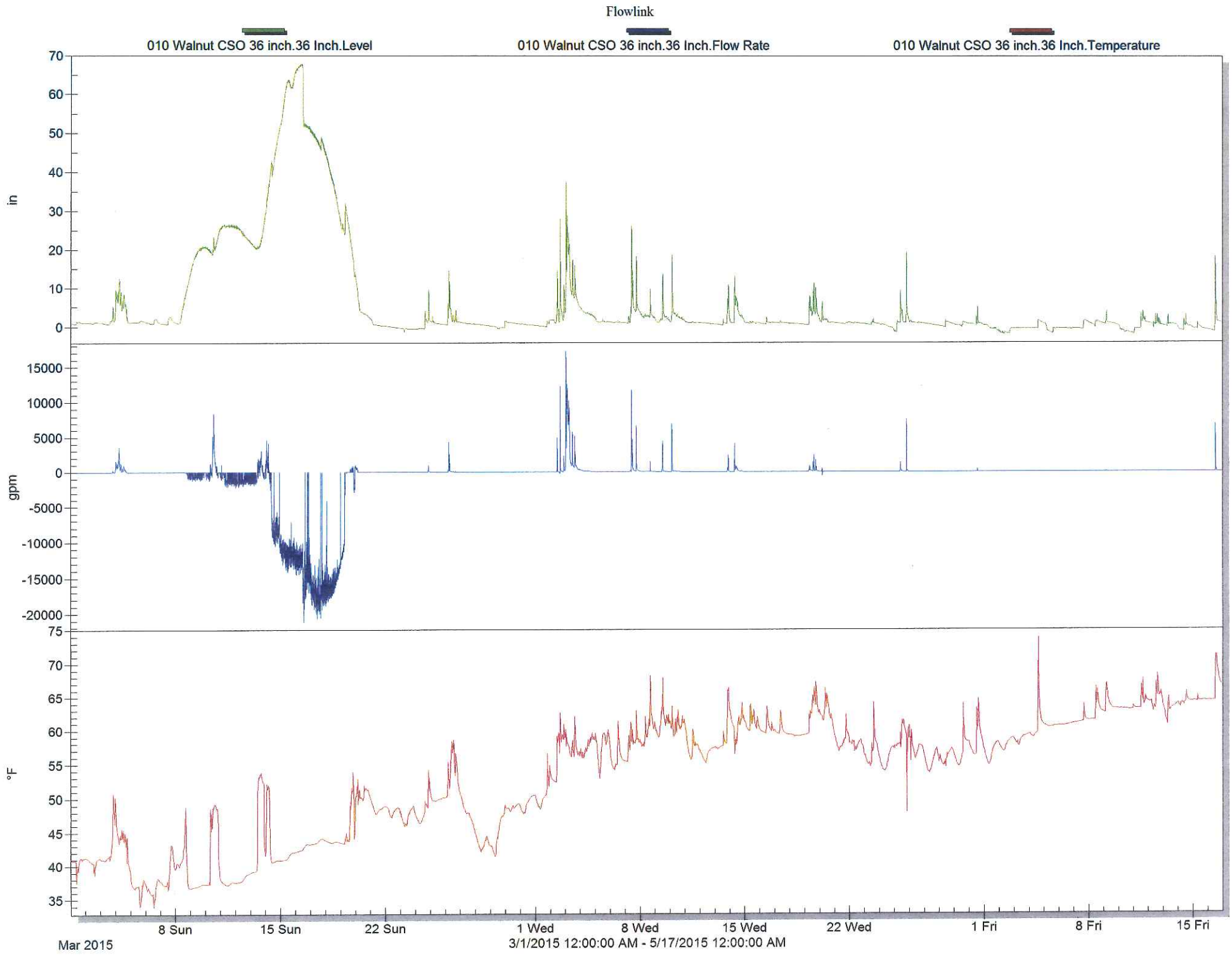
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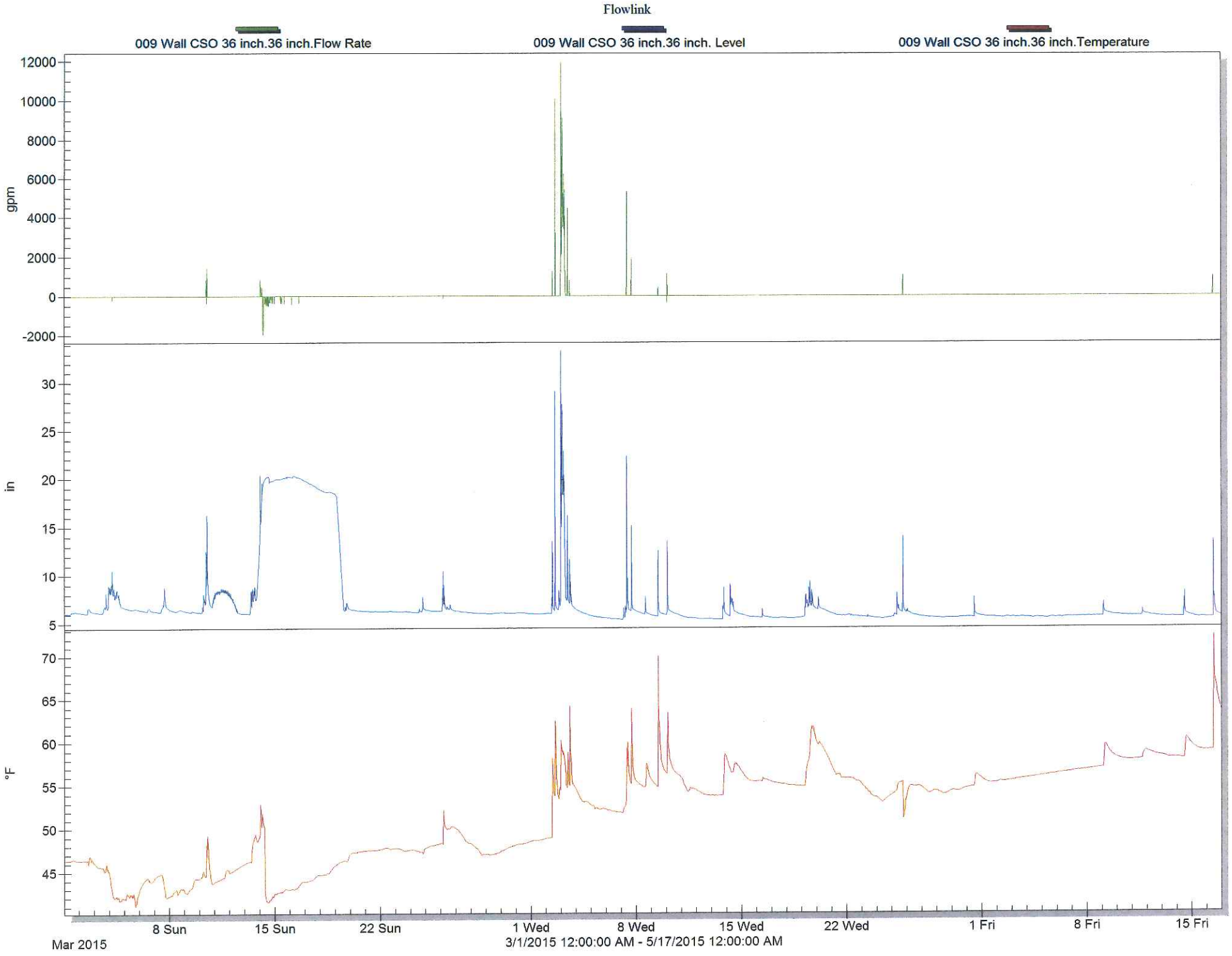
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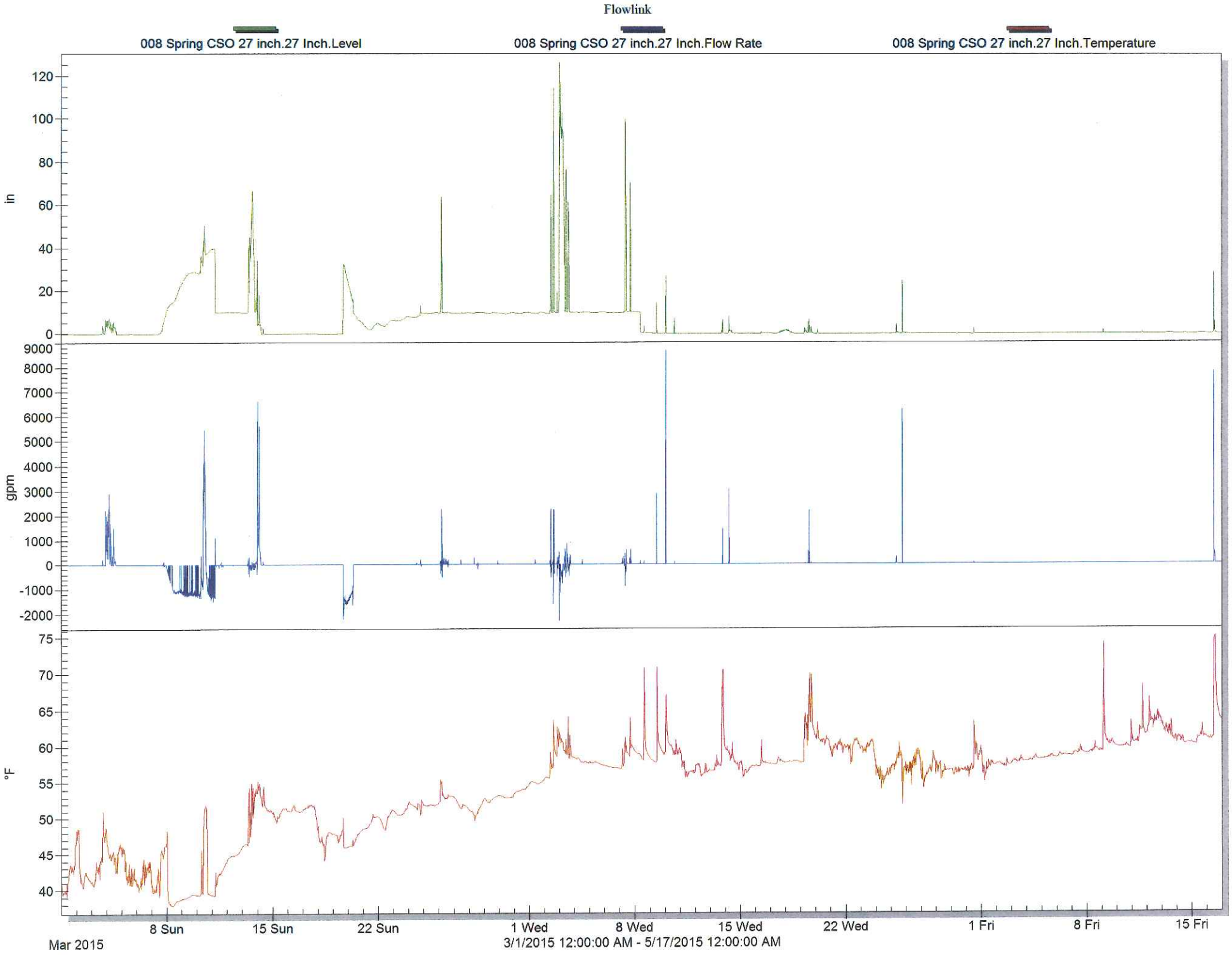
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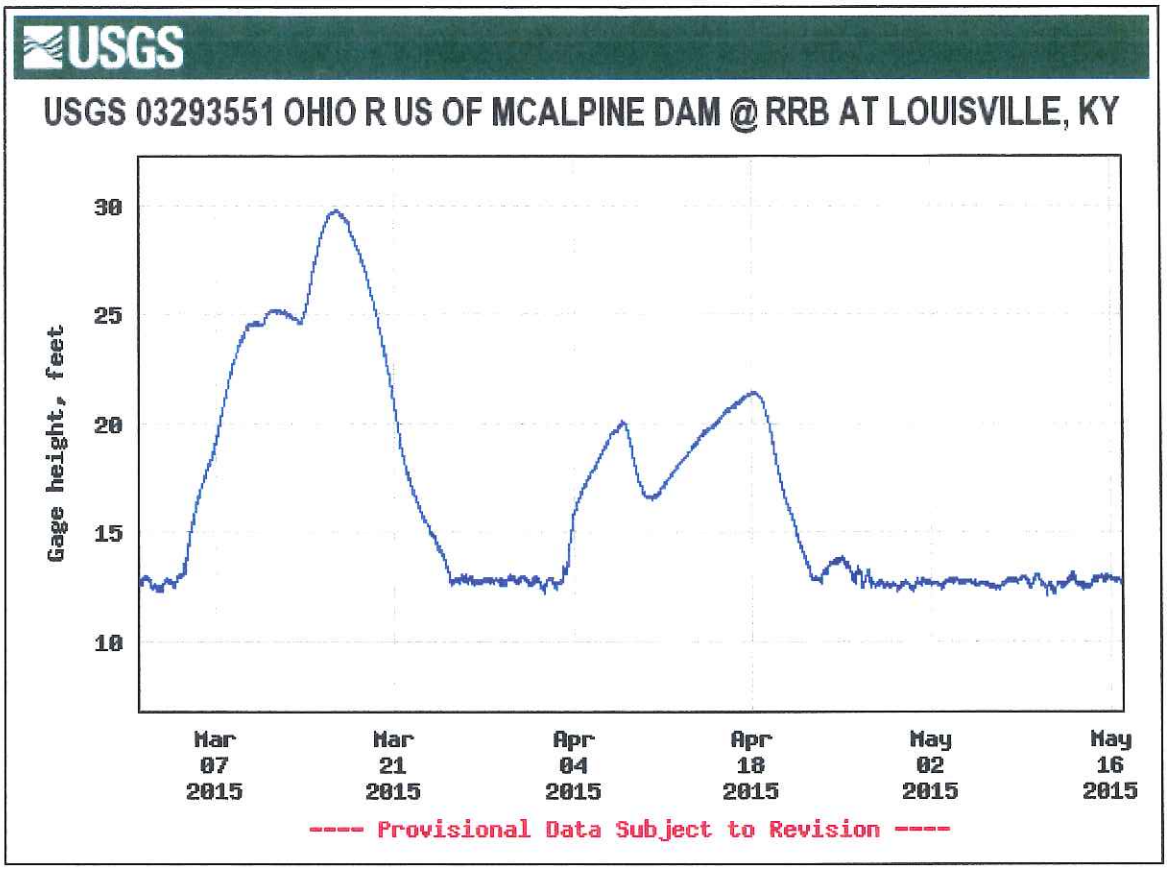
USGS
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Gage height, feet
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Mar 21 2015
Apr 04 2015
Apr 18 2015
May 02 2015
May 16 2015
---- Provisional Data Subject to Revision ----